INFECTION WITH CYTOMEGALOVIRUS

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Abstract
The cytomegalovirus (CMV or Human Herpes Virus 5) is a beta-herpes virus that infects the majority of humans. Herpes Viridae family are viruses who's characteristics are to remain attached to they're host organism all they life and in immunosuppression conditions they'll get themselves reactivated.
A retrospective study of 22 patients with primary and secondary infections with CMV hospitalized at Clinical Hospital of Infectious Diseases of Oradea between 2004-2008 was made on the base of registered data in the clinical observation papers of the patients.The paraclinical confirmation of infection with CMV was made through the presence of Ig M CMV, Ig G CMV (Elisa).
We found 22 pacients with CMV infection, between 2004-2008, 14 were children, 7 femals, 14 from urban environment. The most cases were at patients younger than 17 year old. Primary infection and immunosuppresion were present in half of the cases. CMV has a wide spread in children collectivities in Bihor. Infection was found frequently in urban areas, where in urban crowds is a high risk of contamination. The immunosuppression is the main factor witch leads to the apparition of clinical infection with CMV.

Keywords: cytomegalovirus, immunosuppresion, herpes

INTRODUCTION

The cytomegalovirus (CMV) or Human Herpes Virus 5 is part of Herpes Viridae family (*Table 1*), viruses with DNA witch have the characteristics to remain in the host organism all his life (latent or persistent viruses) and in immunosuppression condition they'll get themselves reactivated.

Table 1.

Herpesviridae Family

Human Herpes Virus (HHV)	*Name*	***Type***
1	**Herpes simplex-1 (HSV-1)**	**Alphaherpesvirinae**
2	**Herpes simplex-2 (HSV-2)**	**Alphaherpesvirinae**
3	**Varicella Zoster virus (VSV)**	**Alphaherpesvirinae**
4	**Epstein-Barr Virus (EBV)**	**Gammaherpesvirinae**
5	**Cytomegalovirus (CMV)**	**Betaherpesvirinae**
6	**Herpes lymphotropic virus**	**Betaherpesvirinae**
7	**Human herpes virus-7 (HHV-7)**	**Betaherpesvirinae**
8	**Human herpes virus-8 (HHV-8) Kaposi's sarcoma- associated herpes virus (KSHV)**	**Gammaherpesvirinae**

The virus may be transmitted from mother to child (before, in time or after delivery of child), thru saliva, breast milk, vaginal secretion, sperm, urine, feces, infested objects and also through organ transplant or blood transfusion.

The primary infection occurs to the high risk persons, witch hasn't been before infected with cytomegalovirus and witch can manifest asymptomatic disease or mild symptoms if they're immune system are competent. The secondary infection represents the activation of latent infection at seropositives person and occurs in immunosuppression conditions.

The primary infection can be present from the moment of birth (congenital infection) or postnatal.

Postnatal primary infection can be asymptomatic, or with mild symptoms or mononucleosis-like syndrome (fever, malaise, lymphocytosis with atypical lymphocytes), hepato-splenomegaly, pharyngitis, jaundice (1, 8).

The secondary infection is reactivation of latent infection of CMV at immunocompromised hosts and it can affect many organs frequently causing pneumonia, gastro-intestinal disease and retinitis.

Interstitial pneumonia with cytomegalovirus manifests fever, dry caught dyspnea, hypoxia and respiratory failure at adults and children.

The gastro-intestinal diseases can be esophagitis, gastritis, gastroenteritis, hepatitis, pancreatitis, cholecystitis and colitis.

Retinitis with CMV is rapid progressive necrosis type witch can lead to retinal detachment and blindness.

Also other clinical diseases can have connections with CMV, such as Ménétrier's disease (hyperplasia and hypertrophy of gastric mucous glands), and atherosclerosis. Infection with CMV can accelerate congenital HIV infection and increase risk for association with neurological diseases (1, 7, 8).

The objectives of this clinical and epidemiological study of infections with CMV are:

1. age, sex, residency area distribution,
2. study of clinical disease's forms,
3. degree of immunosuppression

at the patients admitted in Clinical Hospital of Infectious Diseases of Oradea, between 2004–2008.

MATERIAL AND METHODS

The retrospective study of 22 patients with primary and secondary infections with CMV hospitalized at Clinical Hospital of Infectious Diseases of Oradea between 2004-2008 was made on the base of registered data in the clinical observation papers of the patients. There ware analyzed the following parameters:

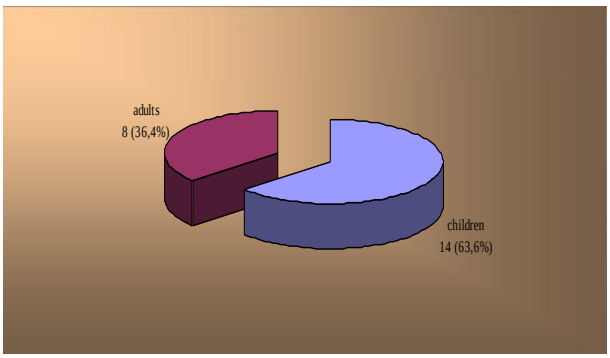
- Demographic: age, sex, residency area.
- Clinical: clinical forms of disease, association with immunosuppression.

The paraclinical confirmation of infection with CMV was made through the presence of Ig M CMV, Ig G CMV (Elisa).

Patience with associated diseases such as diabetes mellitus, candidosis, carential anemia, rachitism, cancer, recent repeated infection, bronchic asthma treated with cortico therapy were catalogued as immunocompromised. The dates were processed with the help of a PC, Microsoft Windows, Microsoft Word and Microsoft Excel software.

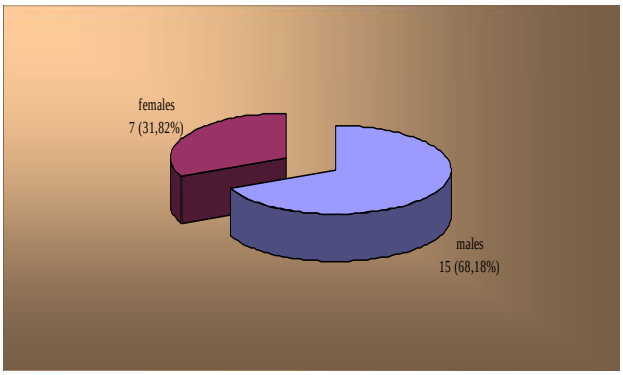
RESULTS

1. In 2004-2008 were diagnosticated with CMV virus infection 22 patients, from witch 14 children (64%) and 8 adults (36%) (*Picture 1*).



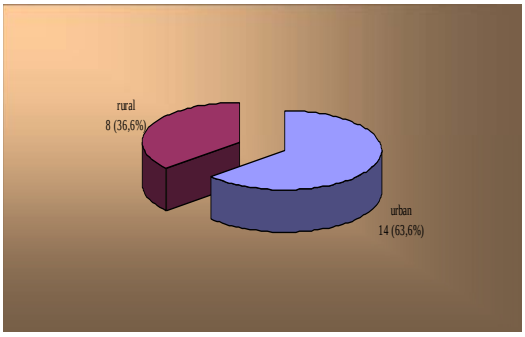
Picture 1. **Groups of study**

2. From the 22 patients 8 were females (36,4%) and 14 were males (63,6%) (*Picture 2*).



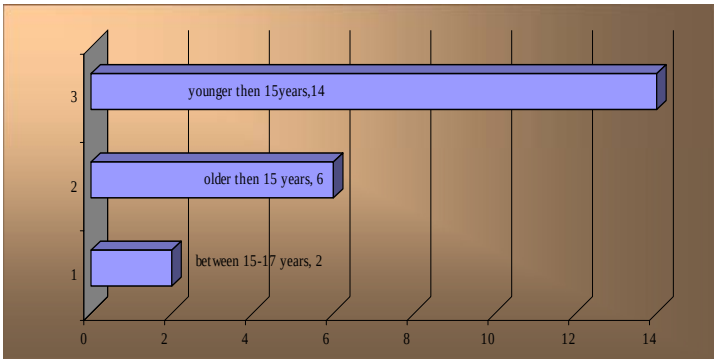
Picture 2. **Gender distribution**

3. From urban environment there were 14 patients representing (63,6%) and from the villager environment were 8 (36,4%) (*Picture 3*).



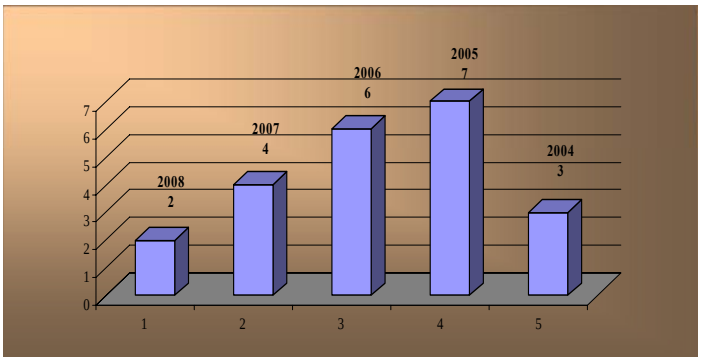
Picture 3. **Residency area distribution**

4. Repartition after the age was made as follows: younger then 15 years – 14 cases (63,6%), between 15 years to 17 years 2 case (9,1%) and older than 17 years – 6 cases (27,3%) (*Picture 4)*.



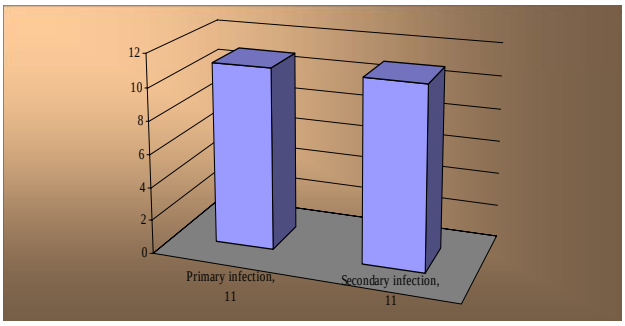
Picture 4. **Age distribution**

5. Repartition on years was decreasing from 2005 – 7 cases to 2008 – 2 cases (*Picture 5*).



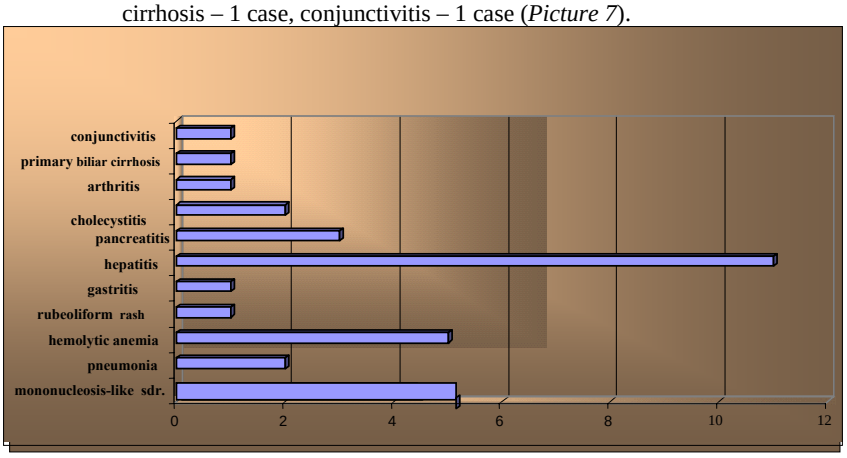
Picture 5 **Years's distribution**

6.Primary infection was present in 11 (50%) from cases and secondary infection was also in 11 (50%) of cases (*Picture 6*).



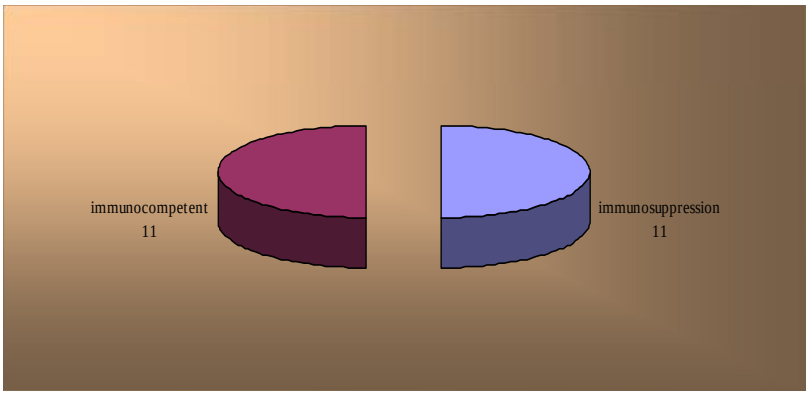
Picture 6 Type of infection

6. CMV mononucleosis was present in 5 (22,72%) cases and the rest 17 (77,28%) patients have other manifestations such as pneumonia – 2 cases, hemolytic anemia – 5 cases, rubeoliform rash – 1 case, gastritis – 1 case, hepatitis – 11 cases, pancreatitis – 3 cases, cholecystitis – 2 cases, arthritis – 1 case, primary biliar cirrhosis – 1 case, conjunctivitis – 1 case (*Picture 7*).



Picture 7. **Clinical forms of disease**

7. Immunosuppression was present at half (50%) from patients (*Picture 8*).



Picture 8. **Immune system situation**

DISCUSSION

Infection with CMV usual is without symptoms and 85% - 90% from adults have Ig G CMV positive. The manifestation appears usually between 10 – 35 years and specially at teenager with age between 15 – 17 years (1,8). In our studies the symptoms were present frequent at children younger then 15 years (63,6%); the contamination at this age was probably produced by a large spread of the CMV, possible in the children's collectivities.

In the year 2005 was found the largest number of infections with CMV and the incidence decreasing to 2008.

The largest number of patients were from urban area (63,6%) because of the contamination with this virus possible in urban crowds.

Primary and secondary infections have symptoms in 11 (50%) cases each of them, although in special literature primary infection usually is asymptomatic or with mild symptoms at immunocompetents patients, the cause of those may relay on the fact that the

presences of the symptoms had determined the patients to consult a doctor meanwhile asymptomatic infections remain undetermined.

Immunocompetents patients had mononucleosis-like syndrome in 5 (22,72%) cases, the rest 17 (77,28%) of cases had other clinical forms of diseases. A particular case was a young child, 8 month old, diagnosticated with primary biliar cirrhosis and Ig M and G positive for CMV. The relation between these two diseases is not yet demonstrated but CMV can produce disturbation of immune system, witch can lead to primary biliar cirrhosis (4).

Another particular case was an adult 35 years old with primary infection with CMV, hepatitis, pancreatitis and arthritis with CMV. The symptoms of arthritis disappeared after etiological treatment of the infection with CMV. Arthritis is uncommon described in special literature in case of infection with CMV (2,3).

The third particular case was a girl 15 years old diagnosticated with hepatitis with CMV, acute viral conjunctivitis, acute angina, rubeoliform rash. CMV conjunctivitis is also uncommon described in literature (5,6).

CONCLUSIONS

1. CMV has a wide spread in children collectivities in Bihor.
2. Infection was found frequently in urban areas, where in urban crowds is a high risk of contamination.
3. There were many clinical forms of infections with CMV: mononucleosis, hepatitis, hemolytic anemia, pneumonia and primary biliar cirrhosis, conjunctivitis, arthritis.
4. The immunosuppression is the main factor witch leads to the apparition of clinical infection with CMV.

REFERENCES

1. Gerald L Mandell at all: Principles and Practice of Infectious Diseases, 5 th Edition, Churchill Livingstone, vol. 1-2, pag.1586-1598.
2. Franssila R at all: Infection and musculoskeletal conditions: Viral causes of arthritis.Best Pract Res Clin Rheumatol. 2006 Dec;20(6):1139-57.
3. Contamin C at all: A case of arthritis caused by cytomegalovirus after kidney transplantation. Transpl Infect Dis. 2004 Jun;6(2):87-9.
4. N D Theise at all: Cytomegalovirus and autoimmune liver disease. J Clin Pathol. 1989 December; 42(12): 1310–1311.
5. Gerau J at all: Spontaneous cytomegalovirus mononucleosis with conjunctivitis. Arch Intern Med. 1977 Nov;137(11):1631-2.
6. Maragon FB at all: Laboratory results in ocular viral diseases: implications in clinical-laboratory correlation. Arq Bras Oftalmol. 2007 Mar-Apr;70(2):189-94.
7. http://www.emedicine.com/med/topic504.htm.
8. http://bestpractice.bmj.com.